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Toward universal coverage in Afghanistan: A multi-stakeholder assessment of capacity investments in the community health worker system

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ABSTRACT

Global efforts to scale-up the community health workforce have accelerated as a result of the growing evidence of their effectiveness to enhance coverage and health outcomes. Reconstruction efforts in Afghanistan integrated capacity investments for community based service delivery, including the deployment of over 28,000 community health workers (CHWs) to ensure access to basic preventive and curative services.

The study aimed to conduct capacity assessments of the CHW system and determine stakeholder perspectives of CHW performance. Structured interviews were conducted on a national sample from 33 provinces and included supervisors, facility providers, patients, and CHWs. Formative assessments were also conducted with national policymakers, community members and health councils in two provinces. Results indicate that more than 70% of the NGO's provide comprehensive training for CHWs, 95% CHWs reported regular supervision, and more than 60% of the health posts had adequate infrastructure and essential commodities. Innovative strategies of paired male and female CHWs, institution of a special cadre of community health supervisors, and community health councils were introduced as systems strengthening mechanisms. Reported barriers included unrealistic and expanding task expectations (14%), unsatisfactory compensation mechanisms (75%), inadequate transport (69%), and lack of commodities (40%).

Formative assessments evidenced that CHWs were highly valued as they provided equitable, accessible and affordable 24-h care. Their loyalty, dedication and the ability for women to access care without male family escorts was appreciated by communities. With rising concerns of workforce deficits, insecurity and budget constraints, the health system must enhance the capacity of these frontline workers to improve the continuum of care. The study provides critical insight into the strengths and constraints of Afghanistan's CHW system, warranting further efforts to contextualize service delivery and mechanisms for their support and motivation.

1. Introduction

Community engagement has emerged as a paramount strategy for enhancing access to healthcare and optimizing efforts of the health system to achieve the Millennium Development Goals (MGDs) (Rosato et al., 2008; Bhutta et al., 2010; Perry and Freeman, 2009; Perry and Zulliger, 2012). Healthcare contexts present complex challenges arising from the diverse geographic, ethnic, and

Acronyms: BPHS, Basic Package of Health Services; CBHC, Community Based Healthcare Department; CHW, Community health worker; FGDs, Focus group discussions; MOPH, Ministry of Public Health; NGO, Non-Governmental Organization.

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sociopolitical factors that require appropriate service delivery architecture for community based healthcare. Community dynamics necessitate a multi-faceted approach to manage informal providers effectively and require a 'systems lens' to ensure capacity, quality and coverage of service delivery. CHWs are now recognized as integral members of the health care workforce, though their roles and functions vary among contexts. In many settings, they provide primary preventive and curative care and serve as the community's critical link to the formal health system. As health workforce crises escalate, they are increasingly filling human resource gaps through task shifting, with additional responsibilities for screening, curative care and health information systems. Despite the positive findings of research studies on programs integrating CHW services, the debates on optimal job descriptions and workload, quality assurance and continuity of care, compensation and motivation remain unresolved (Lehmann and Sanders, 2007; Bhattacharyya et al., 2001).

In Afghanistan, the deployment of volunteer CHWs by the Ministry of Public Health (MOPH) was a key and integral part of its Basic Package of Health Services (Afghanistan MOPH, 2003), implemented in 2003, to improve equitable access to healthcare for rural communities. Major postwar challenges included inadequate health infrastructure, workforce deficits, especially females, and geographic and socio-economic barriers, including cultural constraints on the mobility of women. Maternal and child mortality rates were estimated at 1600 per 100,000, and 172 per 1000, respectively (Bartlett, 2005, and Central Statistics Organization, 2003). The BPHS prioritized maternal and child health, birth spacing and disease control. One male and one female CHW were selected and trained for each village health post, serving up to 150 households. The CHW job description included treatment of childhood diseases, provision of contraceptives, health promotion, and demand-creation for preventive and maternal health services at the supporting health facility. Community health councils were established in 2005, and facility councils were introduced later.

In 2005, the MOPH established the Community Based Health Care (CBHC) Department with responsibility for policy and oversight of the national CBHC program. In 2009, the department expanded to manage the workload of monitoring provincial programs and the training and mentoring of provincial-level NGO trainers. CHW programs were being expanded and improved training modules for both pre-service and refresher training were being prepared. In 2005, the department oversaw the deployment of a facility-based cadre of Community Health Supervisors. It has also introduced various incentive systems and mechanisms to maintain CHW motivation. Recently it has implemented the women's Family Health Action Groups, based on the Care Group Model. Female CHWs engage 10–15 respected female volunteers to conduct health promotion activities for around ten neighboring households, resulting in improved health behaviors, utilization of services, and improved child survival (Edward et al., 2007; Ricca et al., 2014). During the last decade, 28,459 CHWs (49% female) were trained and deployed (NGO quarterly reports to the Grants and Contracts Management Unit.)

Data from the Central Statistics Organization (2014) indicate that 88.4% of the rural population report facility access (<2 h travel time). However, persisting barriers to access reinforce the importance of CHWs. Over 50% of women not attending antenatal care claimed that distance or transport was the reason (APHI MOPH et al., 2010). Security incidents have increased over the past five years and, in 2014, at least 58 districts experienced temporary or permanent facility closures (Safeguarding Health in Conflict, 2014).

Frameworks for enhancing community systems for healthcare, particularly for strengthening CHW performance, identify the key determinants of capacity, motivation and a supportive work environment (GFATM, 2014; Jaskiewicz and Tulenko, 2012). In Afghanistan, these critical factors as well as effective regulatory oversight depend upon targeted investments by a variety of stakeholders.

National-level assessments of Afghanistan's health system have been conducted annually since 2004, using the balanced scorecard strategy. The evidence has illustrated impressive gains in most performance domains, however, the scorecard does not include measures for community-based service delivery (Edward et al., 2011). A recent study on CHW systems, indicated improved referrals by trained CHWs (Newbrander et al., 2012), but aside from a previous operations research study (JHBSPH and IIHMR, 2007) no systematic assessments have been published on CHW services in Afghanistan. This study's main objective was to perform capacity assessments and examine stakeholder investments in the CHW system.

2. Materials and methods

In 2011, we conducted a mixed-methods study to determine systemic constraints in the CHW system and stakeholders' perspectives and investments at the national, facility and community levels. Assessments included both qualitative (key informant interviews, focus group discussions (FGDs) and quantitative methods (structured interviews) (Table 1). Employing multi-stage systematic random sampling, up to 25 health facilities were selected in each province for the national assessments. All supervisors (facility in-charge) of selected health facilities, up to five providers and up to two CHWs were selected randomly from each facility to participate in the survey assessments. Capacity assessments were also performed at the CHW health posts.

All national-level NGO managers involved in the design and/or management oversight of CHW programs were selected for interviews to determine the characteristics of the CHW system. Key informant interviews were conducted with policymakers, and FGDs were conducted with the technical advisory group members of the CBHC Department. Eight facilities from Bamyan and Takhar provinces were selected purposively and eight communities were selected randomly for conducting community and health council FGDs. Quantitative and qualitative data were collected from pretested validated structured questionnaires and FGD and KII guides. Survey teams were recruited based on past experience in quantitative and qualitative surveys and received training on technical content, survey techniques and ethical procedures and demonstrated competencies on pre-post tests. Survey teams comprised of male and female pairs conducted the qualitative assessments, and a five-member team conducted the health facility assessments.

The quantitative data were analyzed using STATA Version 12.0 (StataCorp LP, College Station, TX, USA), and descriptive statistics were employed to summarize results. Qualitative data were analyzed using thematic content analysis and summarized based on key themes evaluated. The study was reviewed and considered exempt human subjects research by the Johns Hopkins University Institutional Review Board, and also approved by the Afghanistan review board. Verbal informed consent was obtained from all study participants.

3. Results

Results of the capacity assessment and perceptions are reported for each stakeholder category and health system level.

Table 1
Sampling strategy for CHW system assessments.

Stakeholder group	Method	Sampling strategy
National level		
MOPH policymakers	KIIs	Purposive (N = 5)
CBHC working group	1 FGD	All members (N = 6)
CBHC technical advisory group	1 FGD	All members (N = 6)
NGO managers (with CHW oversight)	Structured interviews	All managers N = 29
Facility level		
Facility Supervisor	Structured interviews	NHSPA sample: upto 25 facilities selected in each of the 33 provinces by stratified random sampling (N = 640)
Health providers		NHSPA sample: Random selection of upto 5 providers per facility (N = 1821)
Community health supervisor		NHSPA sample: Random selection of 8 facilities in Bamyan and Takhar (N = 8)
Patients and caretakers of children (<5 years)		NHSPA sample: Random selection of 5 patients (>5 years) and 5 caretakers of children under-five per facility
Facility councils	13 FGDs	1 combined or 2 gender segregated per facility (Bamyan and Takhar) (N = 83 participants)
Community Level		
CHWs	Structured interviews	NHSPA Sample: Random selection of upto 2 CHW per facility (N = 436)
Health Posts	Capacity assessments	NHSPA Sample: Random selection of 1 per facility (N = 342)
Health Post councils	6 FGDs	1 combined or 2 gender segregated per post (Bamyan and Takhar) (N = 39 participants)
Community members	16 FGDs	2 gender segregated per community (Bamyan and Takhar) (N = 105 participants)

KEY. CHW: Community Health Worker; CBHC: Community Based Healthcare; FGD: Focus Group Discussion; KII: Key Informant Interview; NHSPA: National Health Services Performance Assessment.

3.1. Health policy leaders' perspectives of CHW policies and systems

All key informants had played a role in the development of policies and programs for community health care. There was unanimous agreement about the value of CHWs and the importance of integrating their services in the formal service delivery. Financing for community healthcare and operational oversight was mainly by funding mechanisms by United States Agency for International Development, European Commission and the World Bank through the Grants and Contracts Management Unit of the MOPH. The establishment of CHWs and Community Health Supervisors in the health system structure was considered the most critical contribution, together with community engagement strategies; Facility and Community Councils and Family Health Action Groups. However, the proliferation of tools and community engagement strategies without any accompanying research evidence was considered a detriment to national scale up. Some key informants questioned the sustainability of volunteer services and believed that monetary compensation for CHWs should be mandatory in the future. Worsening security, illiteracy, and insufficient funding were cited as the most significant constraints to healthcare in the communities.

3.2. CBHC technical advisory board and task force support for CHW systems and performance

Considerable investments were evident from the joint engagement of the Ministry, donors and NGOs to establish evidence-based policies for community health services, such as training protocols, monitoring plans and supervision strategies. The technical advisory teams and the Task Force comprised of key stakeholders met frequently. Creative, culturally appropriate innovations were proposed, including the “Friday community clean up” with children, integrated health posts, which will receive a monthly visit from a doctor, and the institution of CBHC officers in each provincial health office to provide oversight for community-level service delivery. The participants identified similar constraints in the CHW system as policy leaders.

3.3. NGO investment in CHW systems

All 29 NGO's implementing the BPHS reported integrating CHWs in service delivery. Facility or community councils were established by 83% and 72% had launched the Family Health Action Group. Only 14% mentioned integration of activities with the National Solidarity Program, the rural development program, to build public health infrastructure. Seventy-four percent of NGOs reported compliance with BPHS requirement of 40% female CHWs. Sixteen NGOs reported an average catchment area of 100 households or less. More than 80% reported CHW task expectations for preventive and curative care, health promotion, referrals and monitoring (Table 2a). Seventy-nine percent reported monthly facility council meetings, with 76% reporting at least one female member. Two thirds reported training for members either in disease prevention/awareness, problem solving skills, or community mobilization and leadership.

3.4. Health facility engagement in community health services

Interviews with facility supervisors indicated that in 90% of the facilities, there was a functional health council evidenced by written records (Table 2b). Of the 55% providers who reported community engagement, 70% participated in facility council meetings, 41% trained CHWs and 30%, supervision of CHWs. Supervisors' principal concerns were lack of transport for monitoring, limited time and inadequate female participation in meetings. There was almost unanimous agreement that community engagement enhanced health provider trust and service utilization. Except for one, all eight community health supervisors reported supervision of CHWs in the past month and participation in council meetings.

3.5. CHW characteristics and health post capacity

About two-thirds of the CHWs were male, the majority married. 80% were within the recommended range of 20–50 years (Mean: 35 years). Unlike the findings from previous national assessments, over 80% were literate and 70% reported six or more years of school. Over 80% had three or more years experience as a CHW (Table 3). Refresher training was reported by a majority of CHWs for various disease prevention and management topics. A majority reported consultations for children (83%), adults (79%), family planning (83%), health education and referral (>74%). Seventy eight percent covered <150 households, in accordance with BPHS guidelines. A

Table 2a
CHW system investments: NGO manager reports.

Characteristics	n (%)
NGO Protocols for CHW and Health Council Capacity	*N = 29*
Training Modules for CHWs	
Acute respiratory infections	23 (79.3)
Community-integrated management of childhood illness (C-IMCI)	22 (75.9)
Prenatal care	23 (79.3)
Referrals for care	23 (79.3)
Home deliveries	20 (69.0)
Tuberculosis (TB)	20 (69.0)
Vaccinations	22 (75.9)
Malaria	22 (75.9)
Nutrition	22 (75.9)
Family planning (FP)	21 (72.4)
Hygiene	22 (75.9)
Mental health care	16 (55.2)
Disability	14 (48.3)
Community mapping	21 (72.4)
Health Management Information System	18 (62.1)
CHW task expectations	
Households in catchment area	N = 24
≤100	17 (70.8)
>100–150	5 (20.8)
>150	2 (8.3)
Tasks expected of CHWs	N = 29
Health education	23 (79.3)
Support to midwives	22 (75.9)
Encourage skilled-birth attendance	16 (55.2)
Teach about obstetric danger signs	16 (55.2)
Provide micronutrient(s) and anti-malarial	21 (72.4)
Promote FP	22 (75.9)
Provide FP	23 (79.3)
National immunization campaigns	22 (75.9)
Provide Vitamin A	20 (69.0)
Community-based growth promotion	20 (69.0)
C-IMCI	20 (69.0)
Diagnose and treat ARI, diarrhea, and malaria	21 (72.4)
Home visits	22 (75.9)
Referral	21 (72.4)
TB referral and compliance	21 (72.4)
Promote awareness of addictive substances	15 (51.7)
First aid	20 (69.0)
Mental well-being	16 (55.2)
Referral for disability	16 (55.2)
Health committee meetings	21 (72.4)
Community mapping	20 (69.0)
Vital registration	12 (41.4)
Pictorial tally sheets	23 (79.3)
Facility Health Council Task and Capacity Building Expectations	N = 29
Monthly meetings	23 (79.3)
Council meetings with ≥1 female	22 (75.9)
Training on disease prevention/awareness	5 (17.2)
Training on problem solving	3 (10.3)
Training on community mobilization efforts	7 (24.1)
Training on supervision/leadership	6 (20.7)
No skills training	10 (34.5)
Community Health Council Task and Capacity Building Expectations	N = 29
Monthly meetings	22 (75.9)
Councils with ≥1 female member	20 (69)
Training on disease prevention/awareness	3 (10.3)
Problem solving skills	3 (10.3)
Community mobilization	6 (20.7)
Supervision and leadership	5 (17.2)
No skills training	12 (41.4)

majority participated in health council meetings and some in family health action groups and community campaigns.

Supervision systems were well established with 94% reporting three or more visits in six months, and 83% having written records and recommendations. Incentives mentioned were monetary compensation for training expenses and patient referrals; food; commodities; and appreciation by facility staff. The councils and community also supported health post construction, community mobilization for campaigns and utilization of CHW services, and in-kind contributions. More than 85% of CHWs reported recognition and appreciation from council members.

Major constraints to performance were lack of monetary compensation (75%) and inadequacies in transport (69%), medicines (49%), equipment (41%) and insufficient CHWs (10%). Few also mentioned lack of motivation and community support, high community demand, and delayed care-seeking.

Table 2b
CHW system investments: Health facility and health post.

Characteristics	n(%)
Health Facility Investments for CHW Support	
Facility Supervisor Interviews	N = 640
Presence of facility councils	577 (90.2)
Written records of council meetings (past 12 months)	519 (90.0)
Records of councils members	498 (86.3)
Community members participated in council meetings (past 6 months)	544 (94.3)
Council supports CHW activities	441 (76.4)
Provider Reports of Community Engagement	N = 1821
Any self-reported engagement with the community (past 12 months)	1004 (55.1)
Community council meeting	613 (61.1)
Facility council meeting	714 (71.1)
CHW training	418 (41.6)
CHW supervision	303 (30.2)
Family Health Action Group	184 (18.3)
Partnership Defined Quality	158 (15.7)
National Solidarity Program	216 (21.5)
Other (e.g. campaigns, school health, council meetings)	9 (0.9)
Provider Reports of Challenges in Working with Communities	N = 104
Poor participation of women	445 (44.3)
Lack of trust	183 (18.2)
Lack of transport to attend meetings	625 (62.3)
Lack of time	211 (21.0)
Inadequate supervision	103 (10.3)
Minimal support from community leaders	207 (20.6)
Security	19 (1.9)
Access to remote communities	8 (0.8)
Poor community awareness/knowledge	12 (1.2)
Lack of community participation	2 (0.2)
Insufficient budget for community engagement	7 (0.7)
Provider Reports of Perceived Benefits of Community Engagement	N = 1004
Improves trust in health providers	987 (98.3)
Improves trust in health facilities	973 (97.7)
Improves service utilization	987 (98.3)
Provider Perceptions of Community Engagement	N = 1821
Believe community's perception of services is important	1744 (95.8)
Believe communities can be engaged in health service assessment	1217 (66.8)
Health Post Capacity Assessments	N = 342
Infrastructure (Present in good condition)	
Light and ventilation (e.g. windows)	249 (72.8)
Doors	250 (73.1)
Interior walls	244 (71.4)
Exterior walls	209 (61.1)
Roof	241 (70.5)
Compound wall/fence	170 (49.7)
Essential equipment (available and working)	
Scissors	214 (62.6)
Forceps	148 (43.3)
Thermometer	178 (52.1)
Mini delivery kit	104 (30.4)
ORS measure	168 (49.1)
MUAC tape	255 (74.6)
Watch with seconds hand	52 (15.2)
Essential medicines (unexpired)	
Paracetamol	264 (77.2)
Mebendazole	256 (74.9)
Chloroquine	216 (63.2)
Co-trimoxazole	270 (79.0)
Ferrous sulfate and folic acid	296 (86.6)
Chlorohexidine	223 (65.2)
Gentian Violet	259 (75.7)
ORS	308 (90.1)
Oral contraceptives	299 (87.4)
Injectable contraceptives	211 (61.7)
Condoms	293 (85.7)
Tetracycline eye ointment	211 (61.7)
Vitamin A	207 (60.5)
Protocols and Guidelines Available	
IMCI chart (poster/book)	94 (27.5)
Immunization schedule	110 (32.2)
CHW manual	264 (77.2)
Health Posts with related male and female CHW pairs	260 (76)
Mean number of records of services provided in previous month	*Mean*
Deliveries	2.8

(*continued on next page*)

Table 2b (*continued*)

Characteristics	n(%)
Referrals for delivery	7.5
Families supported with contraceptives	60.0
Referral for FP	6.2
Treatment of children for ARI	71.7
Referral for children U5 for ARI	25.3
Treatment of children U5 for diarrhea	61.1
Referral for children U5 for acute diarrhea	23.5
Immunization for children	1.5
Referral for children for immunization	38.8
Referral for children U5 for severe malnutrition	10.6

Gender differences in CHW profiles, service and expectations were evident. A significantly higher proportion of males were literate with higher education. More male CHWs reported services for TB and malaria, health education, and participation in the National Solidarity Program. Although males reported involvement in pregnancy care, a higher proportion of female CHWs performed these services.

Health post capacity assessments indicated that over 70% had adequate physical infrastructure, though availability of commodities, such as the mini delivery kit, forceps and thermometer, was <50%, and essential medicines and supplies ranged from 60 to 90%. Seventy seven percent had a CHW Manual, but <35% had the immunization schedule or Community Integrated Management of Childhood Illness charts.

3.6. Community and health council perspectives of CHW services

FGDs in Bamyan and Takhar indicated that most community and council members appreciated and used CHW services and that women, children and the poor were most likely to use their services (Table 4). A few voiced concerns that the CHWs were illiterate and lacked the competency to treat major conditions. Both council and community members supported CHWs in health post construction, non-monetary incentives, transport for referrals, support to campaigns, ensuring the security of female CHWs and problem solving. Overall, there was a positive opinion about CHWs due to their 24-h availability, geographic proximity and dedication to meet community needs.

Exit interviews of patients and caretakers in the national sample of facilities indicated that <20% were aware of CHWs in their community, but about 30% of those who were aware utilized CHW services prior to visiting a facility (Table 5).

4. Discussion

Emerging from decades of conflict, and the relatively recent institution of the BPHS CHW services, the study findings indicate satisfactory investments for some of the capacity elements of the CHW system including training, supervision and supply of essential medicines. The advocacy and leadership of the CBHC department and commitment of policymakers have been major contributions in the past decade.

Global evidence exists for community-based interventions as effective platforms for extending healthcare delivery and improving health outcomes. Well-designed and managed CHW programs can reduce child mortality and morbidity, promote positive behaviors and ensure cost-effective services and continuum of care (Viswanathan et al., 2010). To achieve optimal performance, adequate and sustained capacity must be ensured in combination with contextually appropriate management support systems for CHW retention and motivation. An enabling work environment, manageable workload, supportive supervision and essential supplies, and support from community and health providers have been cited as the essential elements for ensuring optimal productivity. However, inadequate empirical evidence exists on their individual effects, to craft specific strategies for most healthcare contexts (Bhutta et al., 2010; Perry et al., 2012; Jaskiewicz and Tulenko, 2012).

In Afghanistan, BPHS implementation has resulted in great gains. Coverage and utilization rates for both curative and preventive health services have increased with resulting declines in maternal and child mortality (APHI MOPH et al., 2010). Though the specific contribution of CHWs to the health outcome was not reported, estimates from the 2012 national health information system indicate that over a third of public sector care for sick children and supply of 55% of all public sector short term contraceptives are by CHWs.

4.1. CHW policies and structure

The presence of a specific MOPH unit providing national leadership for CBHC has been critical, as it assumed increasing responsibility for stewardship of the CHW system. It has led a consensus process with the Task Force and technical working groups for the development of evidenced based policies and strategies. Concerns for CHWs' workloads has resulted in consistent resistance to proposed increased involvement of CHWs in mental health, disability care and domestic violence prevention, but their roles have been expanded to birth spacing, neonatal care, use of Misoprostol, and the introduction of Family Health Action Groups on the basis of successful operations research. A major role of the department has been developing various strategies for increasing recognition for CHWs, including the promotion of national and provincial level celebrations of *National CHW Day*. In the last two years they have led a major effort to update training manuals for CHWs, supervisors and health councils.

The NGO BPHS contracts and performance are supervised and monitored by the MOPH Grants and Contracts Management Unit. A majority of NGOs were in compliance with the standard recruitment and training protocols and made considerable effort to train female CHWs. The policy structure for CHW recruitment and deployment accommodates local expectations for CHW selection and pairing of male and female family members (Newbrander et al., 2014). However, shortages of medicines and equipment and the lack of travel expenses for meetings indicate important shortfalls in the system.

4.2. Enabling support systems for CHW performance

In addition to capacity-building through pre-service and in-service training and provision of job-aids, the elements described for an enabling work environment include a manageable workload,

Table 3
Profile and perspectives of CHWs interviewed.

CHW characteristics	N (%)		
	Male N = 278	Female N = 158	Total N = 136
Marital Status			
Married	254 (91.4)	111 (70.3)	365 (83.7)
Single	24 (8.6)	32 (20.3)	56 (12.8)
Widowed	–	15 (9.5)	15 (3.4)
Literate	255 (93.1)***	102 (65.4)	357 (83.0)
≥6 years formal education (includes Madrassa)	245 (88.1)***	88 (55.7)	333 (76.4)
≥3 years experience as a CHW	219 (78.8)	119 (75.3)	338 (77.5)
Refresher training received (in past 12 months)			
C-IMCI	92 (33.1)	50 (31.6)	142 (32.6)
HIV/AIDS	118 (42.4)	56 (35.4)	174 (39.9)
TB	137 (49.3)	96 (60.8)	233 (53.4)
Malaria	153 (55.2)	94 (59.5)	247 (56.8)
FP	127 (45.7)	93 (58.9)	220 (50.5)
Maternal and neonatal care	93 (33.5)	66 (41.8)	159 (36.5)
Universal precautions	67 (24.1)	31 (19.6)	98 (22.5)
Vaccinations	133 (47.8)	69 (43.7)	202 (46.3)
Nutrition rehabilitation	122 (43.9)	73 (46.2)	195 (44.7)
Hygiene	162 (58.3)	77 (48.7)	239 (54.8)
Childhood disease(s) (ARI, diarrhea, fever)	144 (51.8)	71 (44.9)	215 (49.3)
<150 households in catchment area	211 (75.9)	130 (82.3)	341 (78.2)
Number of household visits in previous month			
< 10	89 (32.0)	56 (35.4)	145 (33.3)
10–25	47 (16.9)	27 (17.1)	74 (17.0)
26–50	34 (12.2)	22 (13.9)	56 (12.8)
≥50	108 (38.9)	53 (33.5)	161 (36.9)
Services provided in past three months			
Supervise traditional birth attendants	27 (9.8)	15 (9.5)	42 (9.6)
Train TBAs	23 (8.3)	8 (5.1)	31 (7.2)
Consultations for children	235 (84.5)	126 (79.7)	361 (82.8)
Consultations for adults	228 (82.)	115 (72.8)	343 (78.7)
Family Planning	224 (81.5)	136 (86.1)	360 (82.6)
Antenatal care	82 (29.8)	113 (72.0)***	195 (45.1)
Home deliveries	30 (10.9)	53 (33.5)***	83 (19.0)
TB treatment/diagnosis	67 (24.4)*	18 (11.5)	85 (19.7)
Vaccination	83 (30.2)	34 (21.7)	117 (27.1)
Malaria	133 (48.4)**	40 (25.5)	173 (40.0)
Nutrition rehabilitation	155 (56.0)	85 (53.8)	240 (55.2)
Health education	220 (80.0)***	103 (65.6)	323 (74.8)
Referrals to health facility	220 (80)	114 (72.6)	334 (77.3)
Participation in community activities	N = 238	N = 113	N = 351
Community council meetings	197 (83.1)	96 (85.0)	293 (83.7)
Facility council meetings	176 (74.3)	65 (57.5)	241 (68.9)
Family Health Action Group	70 (29.5)	39 (34.5)	109 (31.1)
Partnership Defined Quality	27 (11.4)	12 (10.6)	39 (11.1)
National Solidarity Program	110 (46.4)***	30 (26.5)	140 (40.0)
Other (Polio campaign, women's councils, etc.)	4 (1.7)	1 (0.9)	5 (1.4)
Supervision			
CHWs reporting supervision	271 (97.8)	157 (99.4)	428 (98.2)
≥3 supervision visits in past 6 months	266 (95.7)	152 (96.2)	418 (95.9)
For those reporting supervision			
Record of recommendations	227 (84.4)	127 (81.9)	354 (83.5)
Brought supplies	115 (42.8)	77 (49.7)	193 (46)
Checked records	131 (48.7)	71 (45.8)	203 (48.3)
Checked finances	13 (4.8)	7 (4.6)	20 (4.8)
Observed consultation	137 (50.9)	83 (55.3)	220 (52.4)
Asked knowledge questions	92 (34.5)	48 (32.0)	140 (33.3)
Provided medical information/instruction	124 (46.4)	59 (39.3)	184 (43.8)
Provided instruction on administration	86 (32.2)	47 (31.3)	133 (31.7)
Accompanied on household visit	61 (22.9)	31 (20.7)	92 (22.1)
Compensation and/or incentive received	57 (20.6)	26 (16.5)	83 (19.1)
Type of compensation/incentive			
Regular salary/stipend	7 (12.3)	6 (23.1)	13 (15.7)
Refresher training	10 (17.5)	4 (15.4)	14 (16.9)
Transportation money	37 (64.9)	13 (50.0)	50 (60.2)
Food for training	28 (49.1)	12 (46.2)	40 (48.2)
Money for referral (FP, TB, etc.)	12 (21.1)	5 (19.2)	17 (20.5)
Other (bicycle, training, clothing, phone card, etc.)	8 (14.1)	3 (11.5)	11 (13.2)
Reported constraints to performance			
Lack of training/knowledge	84 (30.3)	41 (25.9)	125 (28.7)
Lack of feedback of performance	19 (6.9)	11 (7.0)	30 (6.9)
Delayed care seeking for children	42 (15.2)	19 (12.0)	61 (14.0)

(*continued on next page*)

Table 3 (*continued*)

CHW characteristics	N (%)		
Inadequate transport	195 (70.4)	105 (66.5)	300 (69)
Lack of time	39 (14.1)	22 (13.9)	61 (14.0)
Lack of motivation	67 (24.2)	43 (27.2)	110 (25.3)
Inadequate CHWs	28 (10.1)	15 (9.5)	43 (9.9)
Poor working environment	45 (16.2)	18 (11.4)	63 (14.5)
Lack of supplies/medicines	143 (51.6)	69 (43.7)	212 (48.7)
Lack of equipment	109 (39.4)	69 (43.7)	178 (40.9)
Lack of supervision	9 (3.2)	4 (2.5)	13 (3.0)
Inadequate salary/remuneration	214 (77.3)	114 (72.2)	328 (75.4)
Lack of communication/coordination with facility	12 (2.8)	8 (1.8)	20 (4.6)
Lack of community support	33 (11.9)	19 (12)	52 (12)
Lack of coordination with councils	12 (4.3)	6 (3.8)	18 (4.1)
Inability to conduct household visits	7 (2.5)	7 (4.4)	14 (3.2)
Recommendations for improving performance			
Salary or stipend	60 (22.4)*	17 (10.8)	77 (18.1)
Support health post (e.g. land, supplies)	33 (12.3)*	6 (3.8)	39 (9.2)
Transportation for home visits (e.g. bicycle)	39 (14.6)**	7 (4.5)	46 (10.8)
Increased appreciation and recognition	135 (88.2)	61 (80.3)	196 (85.6)
Improved supervision	51 (19.0)	27 (17.2)	78 (18.4)
Additional training	76 (28.4)	32 (20.4)	108 (25.4)

*P < 0.005, **P < 0.001, ***P < 0.0001.

essential commodities, supportive supervision, and health system and community support (GFATM, 2014; Jaskiewicz and Tulenko, 2012; Pallas et al., 2013).

This study found that CHW refresher training was routine with most receiving four or more courses during the previous year. Unlike other studies that report on the effectiveness of CHW services, we did not perform direct observations of clinical care at the health post as CHWs do not have standard service delivery hours and patients' access care at varying times. An apparent study limitation is the lack of CHW knowledge assessments, but a previous study demonstrated high levels of knowledge (70–80%) for basic preventive and curative care using vignettes (JHBSPH and

Table 4
Community and health facility/post council perspectives of CHW services.

CHW recruitment
"The CHW was selected because he was a wise and understanding person. Although he doesn't have enough education, he is appropriate for this community." – Community council member, Takhar
"We selected a person who is honest and provides proper services." – Facility council member, Takhar
CHW Services
"They give good medicines that heal patients. If the patient's problem is serious, they send them to the clinic." – Facility Council member, Bamyan.
"CHW gives us medicine for ordinary diseases." – Community member, Takhar
"He gives what he has available. His work is good. If he received professional training and was more literate, the quality would be better. 'In a city where all people are blind, the one who has one eye is the king.'" – Facility Council member, Takhar
"When a person gets sick in our community, we immediately take the person to the CHW. The CHW is a volunteer, and provides services on time. The quality is good." – Community member, Takhar
"The quality of CHW services is good because CHWs pay attention to us." – Community Member, Bamyan
"We are satisfied with our CHW's services. If we did not have our CHW, our basic health problems won't be solved." – Community member, Takhar
"The quality is good because I had an 'ordinary disease'. If I had a critical disease, the CHW could not have cured me." – Facility Council member, Takhar
"CHW services are very good, because they give good medicines in the early stages of illnesses." – Community member
"It is not of good quality because my daughter has been sick for three days and I have not obtained any medicine from the CHW yet." – Community Member, Bamyan
"It is good provided that supervisors deliver medicines to community health workers on time."
– Facility Council Member, Bamyan
Equitable Services
"All the people use (CHW services) because CHW is our doctor." – Community Council member, Takhar
"We are not wealthy and people of the village are poor so they all obtain the medicines from health post." – Facility Council member, Bamyan
Support to CHWs
"We are cooperative with CHWs. We help CHWs when they have problems. We don't pay them, but we give them food." – Community member, Takhar
"We help transport referred patients to the clinic. You know, in spring and summer the river rises in this area and we don't have roads for vehicles. We take our patients, especially pregnant women on stretchers to the clinic." – Community Council member, Takhar
"We only helped CHWs transport medicines. If they have other problems, we will help them." – Facility Council member, Takhar
"If they ask for land for a separate room, we will give them. Why not!" – Facility Council member
"I verbally encourage them and I also helped in delivering health messages." – Facility Council member, Bamyan
"The community is poor. We are unable to support CHWs financially. We can only encourage them and assist in kind." – Community member, Takhar
"We encourage sick people to use CHW services. In addition, we conduct meetings with CHWs to discuss people's health problems and find solutions to them." – Facility Council member, Takhar
"We built and painted the clinic. We collected money from people for this. This is a kind of support." – Facility Council member, Takhar
"We raised awareness among people on how to keep personal hygiene including washing hands before food and after toilet." – Community Council member, Takhar
"We provided pregnant women information about vaccination, medicines and ambulance." – Facility Council member, Takhar
"We identified people's need and suggested building a waiting room. We proposed building a waiting room for men and another for women. We also built a wall around the clinic, planted some trees, and supplied clean water to the clinic." – Facility Council member, Takhar
Trust in Health Services
"Our trust in health services has improved because CHW gives us medicine and vaccine. The CHW has also developed our health awareness." – Community member, Takhar
"Yes, our trust has increased. What would our people have done if we did not have a CHW?" – Community member, Bamyan

Table 5
Patient and caretaker awareness and utilization of CHW services.

Awareness of services	n (%)
Caretakers and Patients (≥5 years)	N = 2624
Awareness of CHW in the community	456 (17.4)
Sought care from CHW before going to health facility	126 (27.6)
Caretakers of children (<5 years)	N = 2528
Awareness of CHW in the community	377 (14.9)
Sought care from CHW before going to health facility	125 (33.4)

IIHMR, 2007).

The frequency and quality of CHW supervision was apparent, but since almost all community health supervisors are male, concerns have been raised about supervision of female CHWs, however pairing of related CHWs (76% of sample) may have addressed this obstacle. To address female CHW oversight for reproductive care functions, initiatives for engaging facility midwives have been recently introduced. In previous operations research on CHWs (JHBSPH and IIHMR, 2007), about 27% of all health facilities were supervising more than 20 CHWs. This problem persists, especially among remote facilities warranting the deployment of additional supervisors. Alternative mobile strategies are being experimented to promote peer-to-peer support. This has proven to be successful at enhancing communication and access to providers among remote communities (Ordinioha and Onyenaporo, 2010).

Essential medical commodities and supplies were adequate in 60–80% health posts, but become a challenge during winter when communities are inaccessible. Essential medicines are a critical facilitating factor, as stock-outs lead to loss of credibility and trust by community members (Lehmann and Sanders, 2007; Stekelenburg et al., 2003). A revised list with increased quantities of medicines for the “CHWs' Kit” has been recently introduced to address this.

Other strong motivational factors for CHWs are the community's acceptance and appreciation of services and respect and endorsement of the facility staff. In a recent study conducted in Brazil, empathetic communication and perseverance were identified as unique attributes of CHWs, leading to increased engagement with the healthcare system (Pinto, da Silva, and Soriano, 2012). Though FGDs were conducted in only two provinces, similar observations were evident in the previous national study, where community members remarked about polite and empathetic characteristics of the CHWs and their persistence to ensure their children were immunized and women access antenatal care. Although most communities appreciated free and accessible services, many were unaware of the specific role and the limits to the functions of CHWs. NGOs need to improve coordination with village leaders and health councils to address this gap.

Functional facility councils emerged as significant predictors of quality of care and provider performance in an earlier study (Edward et al., 2012). Health council members indicated their support for CHWs through provision of health infrastructure, land, commodities, non-monetary incentives, transport, for referrals, etc. They also appreciated access to 24-h care throughout the year, especially to female CHWs, who could be accessed by women without a male escort and provided a social forum for women to congregate at the health post. Facility staff identified transport as a major impediment to engagement. Devoid of adequate facility support, CHW systems will be unable to ensure appropriate referral and continuity of care for patients.

4.3. Workload expectations

One of the major threats to the motivation and sustainability of any CHW system is an increasing workload. This was reported in a study of full-time, salaried Health Extension Workers in Ethiopia (Medhanyie et al., 2012). In situations with part-time volunteer CHWs with minimal financial incentives, an increasing scope and expanding workload may eventually result in fatigue and demotivation, negatively impacting the quality of their performance. In some contexts, CHWs have compromised, by selecting a restricted social group or only the tasks that are feasible (or rewarded), and neglecting other responsibilities (Hermann et al., 2009). Complimenting facility information systems with community based vital events registration and disease surveillance is of critical value, but requires considerable time investments (Mitsunaga et al., 2013). Periodic consultations with CHWs are essential for their feedback on constraints to performance to inform adjustments to task expectations.

CHWs in Afghanistan face similar threats with some expansion of their roles in preventive and curative care, and suggestions for additional or expanded roles in mental health, disability management, and prevention of non-communicable diseases. Because they are often natural leaders they may also get involved with other development activities affecting their communities. Of possible constraints to performance, only 14% complained of lack of time, and only 10% of too few CHWs, but 25% requested additional training, to acquire news skills and knowledge. The life cycle approach, postulated to integrate a comprehensive approach to maternal, newborn and child health in the community may not be feasible for voluntary ‘generalist’ CHWs in Afghanistan, without reducing the population served or differentiating scopes of work between different types of CHWs (Haines et al., 2007).

4.4. Compensation and incentives

Incentive systems for CHWs have shown that intrinsic motivation and non-monetary incentives are as important in enhancing performance as monetary incentives are, and that the latter cannot be sustained over the long term in many contexts (Glenton et al., 2010; Amare, 2009; Mkandawire and Muula, 2005; Ramirez-Valles, 2001). Though the in-kind contributions from community members were appreciated, it may not meet the long-term needs as a majority reported lack of compensation as a major constraint to performance.

Both monetary and non-monetary commodities of food, clothes, transport and other supplies are commonly reported incentives (Miller et al., 2014), but status, community recognition and the intrinsic motivation resulting from values and job satisfaction have not been adequately documented. Social prestige and positive community feedback were identified in a BRAC study (Alam et al., 2012) and altruistic reasoning was identified as a motivating factor in a recent ethnographic study in Ethiopia and Mozambique (Maes and Kalofonos, 2013). This study has documented the importance of status and community recognition of CHWs. Since 2010, the annual *National CHWs' Day* has been a powerful motivator and advocacy tool for CHW recognition. Anecdotally, many, if not most, CHWs will describe their motivations as serving the community and observing their religious duty.

The government's volunteer policy for CHWs has been reviewed and reaffirmed periodically over the past ten years. A total annual cost in excess of USD 6 million was estimated if CHWs were to be paid USD 20 per month (Belay, 2010). A detailed costing of the CBHC program in Afghanistan has not yet been undertaken. Estimated costs for scaling up CHWs across Sub-Saharan Africa suggest an annual average cost of USD3750 to train, equip and support each salaried CHW (USD 960 annually), caring for an average population of 650 persons (McCord et al., 2013). Future considerations of financial compensation for CHWs will need to estimate the costs of

compensation, and other program costs and determine the cost benefit implications from CHW contributions to health services.

4.5. CHW retention

In the BRAC model, CHWs receive income from sale of medicines and health products and incentives for referrals and some specific services, yet increasing attrition was reported after three years of service (Standing and Chowdhury, 2008; Alam et al., 2012). Likewise, in Uganda, authors reported a 91% retention rate of volunteer CHWs after two years, and 86% after five years (Ludwick et al., 2013). The major reasons for loss were relocation, being too busy, and compensated employment. Recent estimates from the CBHC Department indicated a national dropout rate of <5%, which is in the lower-range reported in the literature (Bhattacharyya et al., 2001; Miller et al., 2014). Attrition among male CHWs is likely to increase as a significantly higher proportion (22%) recommended salary or compensation to enhance performance.

5. Conclusion

The findings from the CHW capacity assessment indicate that some of the system inputs like training, supervision and supplies are adequate, but require appropriate CHW information systems to monitor capacity and performance. Fragile contexts, like Afghanistan, exacerbate the commonly reported impediments to CHW performance in other settings due to increased security risks and political instability, which inhibit the access and delivery of optimal healthcare. In Afghanistan, an effective work environment, supporting CHW performance, has been provided by the pairing of male and female CHWs, establishment of health councils and family health action groups and oversight by community health supervisors, all complimented by the leadership of the CBHC Department and NGOs and the governance of the Grants and Contracts Management Unit of the MOPH.

Issues of CHWs' workload and motivation are ongoing concerns, and the CBHC Department and its Task Force addresses requests for extensions to their job description and additional mechanisms to increase appreciation of their efforts within the community on a regular basis. As the role of primary healthcare advances as Afghanistan undergoes the epidemiologic transition, education and competencies of CHWs will become more professionalized and time demands increase, all necessitating appropriate compensatory mechanisms. Successful management of these challenges will be facilitated by the continued planning and management of the CHW system as an integral part of the BPHS.

Author contributions

The study was designed and conducted by AE, MR, KO and SA. AE wrote the manuscript with contributions from IA and CB. KO, MR and CB performed the analysis. All authors read, edited and approved the manuscript.

Competing interests

The authors declare that they have no completing financial interests.

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